Appendix 2: Methyl Parathion Bee Incidents

Table 1: Terrestrial Methyl Parathion Incidents -Bees

					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
1/ 1978	7,800 to 10,400 all hives were reduced below mainte-nance level and 50 hives were lost.	Corn	IA	Methyl parathion (Penncap-M)	Dead worker bee	1. 0.91 2. 0.60 3. 2.00 4. 2.00
					Dying worker bees	1. 0.28 2. 0.84
					Pollen from brood nest comb	1. 0.281 2. 0.0072
Applied at 1 lb a.i./A to pollen producing corn for European corn borer. Two apiaries, one 500 yards and another within 1 1/4 miles. (Source: Stoner, 1979)						
2/ 1978	58 hives destroyed 111 severely damaged 80 moderately damaged 21 Undamaged	155 A. Alfalfa for Hay	WY	Methyl parathion	item miles pollen 0.7 “ 0.7 “ 0.7 “ 1.2 “ 1.2 “ 0.6 “ 0.6 “ 1.5 “ 1.5 honey 0.7 “ 0.7 “ 0.7 “ 0.6 “ 1.5 wax 0.7 “ 0.7 “ 0.6 wax & honey 0.7 dead bees 0.7 “ 0.7 “ 0.6	0.33 1.52 0.08 0.06 0.04 0.06 1.25 0.07 0.22 0.01 0.02 0.02 0.01 0.01 + + 0.1 0.01 0.9 1.0

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Aerial applied at rate 0.5 lbs a.i./A to control aphids. "Because climatic conditions were excellent for the application, the kill could not be attributed to drift (it was calm, with little or no wind) and temperatures were in the range that allowed the spray to settle immediately."						
1/ 1992		Apple orchard	WA			
This concerns 33 bee kill complaints, mostly from Yakima County but including Grant, Okanogan, Columbia, Benton, and Franklin counties, stemming from the use of microencapsulated methyl parathion. It had been applied to orchards that had blooming plants in the cover crop. Both the pesticide label and rules of the Department of Agriculture prohibit this practice. To prevent similar occurrences in the future the WA Dept of Agriculture adopted an emergency rule which requires pesticide dealers to provide users with a copy of the Department rules relating to methyl parathion.(WSDA)						
2/ 12/23/ 92	Not reported	Apple Orchards	NC	Methyl parathion (Penncap-M) Chlorpyrifos	bees	0.67 ppm 0.03 ppm
Some owners of the apple orchards admit using methyl parathion and/or chlorpyrifos, however, it was impossible for the inspector to identify whose application ie responsible for the killing. (NCDA)						
2/ 6/10/93	6 of 94 damaged	Apple Orchards	NC	Methyl parathion Guthion Carbaryl	Apple leaves (orchard A)	15 ppm 0.8 ppm 0.02 ppm
				Methyl parathion Guthion Carbaryl	Bees	0.73 ppm nd nd

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No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion Guthion Carbaryl	Bees	0.93 ppm nd nd
				Methyl parathion Guthion	Honey	nd nd
				Methyl parathion Guthion	Honey	nd nd
				Methyl parathion Guthion	Brood Rack	0.03 ppm nd
				Methyl parathion Guthion	Brood Rack	nd nd
				Methyl parathion Guthion Captan Endosulfan Sulfate	Vegetation (Orchard B)	nd 40 ppm 9 ppm 1.3

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion Guthion Captan Endosulfan Sulfate	Vegetation (Orchard B)	nd nd nd 1.2
In an effort to determine the if the bees were exposed to pesticides bees samples were taken. To determine what pesticide was used by the two nearby orchard vegetation samples were taken.(NCDA)						
3/ 6/10/93	Not reported	Apple orchards	NC	Methyl parathion (Penncap-M)	Bees	Not reported
Because there are so many orchards near the bees is possible to how they received the pesticide.(NCDA)						
3/ 6/16/93	Not reported	Apple Orchard	NC	Methyl parathion (Penncap-M)	Bees	0.67 ppm and 0.80 ppm
(See next incident for narrative)						
4/ 8/10/93	Not reported	Apple Orchard	NC	Methyl parathion	Bees	0.54, 1.10 and 2.00 ppm
Owners of the nearby orchards were interviewed and vegetation samples 4 of 6 orchards showed the presence of methyl parathion.(NCDA)						
5/ 7/6/93	Not reported	Apple orchard	NC	Methyl parathion Chlorpyrifos	bees	0.79 ppm

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
An analysis of the bees showed the presence of methyl parathion at 0.79 ppm which would be lethal. Suspected causes of the problem were two orchards not far removed from the scene of the bee kill but one of them has not been maintained and therefore not sprayed, and the other one used Lorban (chlorpyrifos). Neither had used methyl parathion, so the source of the problem was not found but there is little question about the cause of death of the bees.(NCDA)						
6/ 8/13/93	Not reported	Orchard	NC	Methyl parathion (Penncap-M) Phosmet (Imidan) Guthion	Bees	0.71 ppm 1.12 ppm 0.29 ppm
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard L)	0.50 ppm nd 28 ppm
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard W)	nd 0.69 ppm 0.65 ppm
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard B)	25 ppm 0.93 ppm 5.3 ppm

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion Phosmet Guthion	Vegetation from apples trees (Orchard B2)	0.25 ppm nd 0.44 ppm
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard L2)	1.0 ppm nd nd
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard L3)	0.27 ppm nd 168 ppm
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard B3)	41 ppm nd 20 ppm
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchar M)	18 ppm nd 0.61 ppm

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion Phosmet Guthion	Vegetation from apple trees (Orchard L4)	0.15 ppm nd 0.12 ppm
Results of samples from the orchards showed the presence of Guthion in eight orchards sampled. Methyl parathion was detected in seven orchards and phosmet was detected in one orchard.(NCDA)						
7/ 8/17/93	Not reported	Apple Orchard	NC	Methyl parathion Chlorpyrifos	Bees	3.3 ppm nd
				Methyl parathion Chlorpyrifos	Vegetation from apple orchard	nd 2.9 ppm
				Methyl parathion Chlorpyrifos	Vegetation from apple orchard	nd 1.1 ppm
				Methyl parathion Chlorpyrifos	Vegetation from apple orchard	nd 1.7 ppm
An analysis of bees showed methyl parathion. Inspection of nearby orchards showed use of chlorpyrifos. This suggests the bees traveled farther than had been anticipated.(NCDA)						

Table 1: Terrestrial Methyl Parathion Incidents -Bees						
					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
8/ 6/26/94	Not reported	Apple orchard	NC	Methyl parathion (Penncap-m) Guthion	Bees	0.2 ppm nd
				Methyl parathion (Penncap-m) Guthion	Vegetation from apple tree	3.2 nd
Only one large orchard was in the vicinity of the bee hive (3 miles). Methyl parathion residues were found on both the bee and apple foliage samples.						
9/ 8/94	50 colonies 7 Beekeepers	Corn	CO	Methyl parathion	hive top bees nontarget corn	Not reported
Applied to 12 cornfields, none in pollen shed stage. The hive top residue suggests that drift was 1057 feet. Bees were foraging in a 20 acre nontarget corn field was also contaminated as well as wild species in the edge.						
9/ 8/15/94	Not reported	Apple orchard	NC	Methyl parathion Phosmet Guthion Chlorpyrifos Captan Endosulfan	Bees	0.77 ppm nd nd 0.001 ppm nd nd

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion	Vegetation on apple trees	0.12 ppm
				Phosmet		nd
				Guthion		nd
				Chlorpyrifos		0.012 ppm
				Captan		0.013 ppm
				Endosulfan		0.13 ppm
				Methyl parathion	Vegetation from apple trees	0.029 ppm
				Phosmet		nd
				Guthion		nd
				Chlorpyrifos		0.58
				Captan		0.12
				Endosulfan		nd

Two orchards were approximately two miles from the affected hives. As showed above both showed several different pesticides. Only two insecticides, methyl parathion and chlorpyrifos, were found on the dead bees.(NCDA)

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
10/ 4/28/95	Not reported	Apple Orchard	NC		Bees	
				Methyl parathion		3.1 ppm
				Chlorpyrifos		0.10 ppm
				Captan		nd
				Dimethoate		1.7 ppm
				Endosulfan		0.20
				Carbaryl		nd
					Vegetation from apple orchard (J)	
				Methyl parathion		nd
				Chlorpyrifos		0.04 ppm
				Captan		225.0 ppm
				Dimethoate		5.5 ppm
				Endosulfan		0.30 ppm
				Carbaryl		nd
					Vegetation from apple orchard (L)	
				Methyl parathion		nd
				Chlorpyrifos		0.12 ppm
				Captan		3.8 ppm
				Dimethoate		0.09 ppm
				Endosulfan		0.10 ppm
				Carbaryl		nd

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion	Vegetation from apple orchard (S)	nd
				Chlorpyrifos		0.24 ppm
				Captan		0.21 ppm
				Dimethoate		0.13 ppm
				Endosulfan		75 ppm
				Carbaryl		0.21 ppm
				Methyl parathion	Vegetation from apple trees(LY)	nd
				Chlorpyrifos		18 ppm
				Captan		0.32 ppm
				Dimethoate		0.05 ppm
				Endosulfan		0.02 ppm
				Carbaryl		nd
				Methyl parathion	Vegetation from apple trees (D)	nd
				Chlorpyrifos		3.9 ppm
				Captan		nd
				Dimethoate		nd
				Endosulfan		0.01 ppm
				Carbaryl		5.2 ppm

Table 1: Terrestrial Methyl Parathion Incidents -Bees

					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
Notice that none of the orchard samples showed the presence of methyl parathion. Also the pesticides that were found have the potential to kill bees. However, the concentration on the bees show methyl parathion.(NCDA)						
11/ 6/5/95	Not Reported	Apple orchards	NC	Methyl parathion Chlorpyrifos Carbaryl Guthion	Bees	1.4 ppm 0.04 ppm nd nd
Two nearby orchards had been sprayed with Penncap-M (methyl parathion) and one with Lorsban (chlorpyrifos). Which orchard contributed to the bee kill is unknown. It should also be mentioned that one of the orchard owner says that he always mows before spraying.(NCDA)						
12/ 6/6/95	Not reported	Apple orchard	NC	Methyl parathion Chlorpyrifos Endosulfan Phosmet Guthion	Bees	0.90 and 1.4 ppm 0.02 and 0.08 ppm nd and nd nd and nd nd and nd
Bees show exposure to methyl parathion and chlorpyrifos. However, the source of the pesticide is unknown. The closest apple orchard had not been treated this year.(NCDA)						

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
13/ 6/18/95	Not reported	Apple orchard	NC	Methyl parathion Chlorpyrifos Endosulfan Phosmet Guthion Carbaryl	Bees	(Three samples) 0.80, 1.4 & 5.2 ppm 0.03, 0.05 & 0.06 ppm nd, nd & nd nd, nd & nd nd, nd & nd
The investigation did not mention any visits to nearby orchards and question them about recent pesticide applications. However, bee samples did show methyl parathion and chlorpyrifos concentrations. (NCDA)						
14/ 6/20/95	Not reported	Apple Orchards	NC	Methyl parathion Chlorpyrifos Endosulfan Phosmet Guthion Carbaryl	Bees	1.5 ppm 0.10 ppm nd nd nd nd

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
				Methyl parathion	Bees	1.0 ppm
				Chlorpyrifos		0.06 ppm
				Endosulfan		nd
				Phosmet		nd
				Guthion		nd
				Carbaryl		nd
				Methyl parathion	Bees	3.0 ppm
				Chlorpyrifos		0.2 ppm
				Endosulfan		nd
				Phosmet		nd
				Guthion		2.2 ppm
				Carbaryl		nd
Three beekeepers reported bee kill on this day. The inspector visited nearby orchards both said they used chlorpyrifos but denied using Penncap-M.(NCDA)						
15/ 7/5/95	Not reported	Apple orchard	NC	Methyl parathion (Penncap-M)	Bees	4.8 ppm
				Chlorpyrifos (Lorban)		0.05
				Endosulfan		nd
				Phosmet		nd
				Guthion		nd
				Carbaryl		

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					Residue Analysis	
No./ Date	Effect/#	Crop	St	Pesticides	Item	Conc. (ppm)
The inspector could not determined the source of the methyl parathion and chlorpyrifos.(NCDA)						
1995-1996 11 incid-ents	Not Reported	Corn (corn adult root root worm beetles)	NB	Methyl parathion	Bees or pollen	Detected
Due bees forageing in treated fields.						
1997 4 incid-ents	Nor Reported	Corn (corn adult root root worm beetles)	NB	Methyl parathion	Bees or pollen	Detected
Due to direct drift over the hives.						